UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/595.561	06/16/2000	Anand G. Dabak	TI 29347	1123

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EXAMINER
CHANG, EDITH M

ART UNIT	PAPER NUMBER
2637	

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/595,561	DABAK ET AL.
	Examiner	Art Unit	
	Edith M Chang	2637	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 October 2004*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-72* is/are pending in the application.

  4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-72* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

  a)☐ All b)☐ Some * c)☐ None of:

  1.☐ Certified copies of the priority documents have been received.

  2.☐ Certified copies of the priority documents have been received in Application No. _____.

  3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

  * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
  Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
  Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____ .

DETAILED ACTION

Response to Arguments/Remarks

1.   Applicant's arguments, see pages 17-19, filed on October 18, 2004, with respect to the

rejection(s)of claim(s) 1-72 under USC 103 have been fully considered and are persuasive.

Therefore, the rejection has been withdrawn. However, upon further consideration, a new

ground(s) of rejection is made in view of Nortel (TSGR1#2(99)090 and TSGR1#5(99)684).

Information Disclosure Statement

2.   The listing of references in the specification is not a proper information disclosure

statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information

submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be

incorporated into the specification but must be submitted in a separate paper." Therefore, unless

the references have been cited by the examiner on form PTO-892, they have not been

considered.

Hence, the "3G standard that comma free codes be selected as groups of 16 codes from a

total set of 17 codes, where more recently for purposes of harmonization the standard has been

modified to propose that each comma free code be formed as 15 codes selected from a total set

of 16 (rather than 17) codes" listed in the second paragraph of the page 23 of the written

specification has not been considered.

Specification

3.   Update the U.S. Patent application 09/316,193 listed in the second paragraph of the page

11 of the written specification, now abandoned.

4.   For the formality of the application under the present office practice, applicant(s) is

required to replace "Claims" with "I or We Claim", "The Invention Claimed Is" (or the

equivalent) before the Claims part of the specification of the instant application. See MPEP

608.01(m).

Claim Objections

5.   Claims 1-26 are objected to because of the following informalities:

Claim 1, line 2: "transmitter" is suggested changing to "a transmitter", "encoder" is

suggested changing to "an encoder"; lines 7 & 9: "circuitry" is suggested changing to "a

circuitry".

Claims 11, 17, & 21, lines 3 & 5: "circuitry" is suggested changing to "a circuitry".

Claim 24, "the transmitter" is suggested changing to "the transmitter circuitry".

Claim 25, line 2: "storage" is suggested changing to "a storage".

Claims 2-10, 12-16, 18-10, 22-23 and 26 are directly or indirectly dependent on the

objected claim 1.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

7.   Claims 1-2, 4-9, 11, 14-18, 21-28, 30-34, 36, 39, 40-43, 46-53, 55-56, 58-60 and 62 are

rejected under 35 U.S.C. 103(a) as being unpatentable over Jamal et al. (US 5,930,366) in view

of Nortel (TSGR1#2(99)090 and TSGR1#5(99)684).

To claims 1-2, 27-28, 50 & 58, Jamal et al. teaches asynchronous CD-

CDMA system (column 2 lines 50-52) with cell-specific long code (column 1 lines 17-21) and

its cell acquisition method in FIG.7, wherein the base station (112) encodes and transmit the

frame (FIG.5) with the primary synchronization code (PSC, Cp) in each slot in the pilot channel

132 of acquisition channels, and secondary synchronization code (SSC, Cs) in the combined

channel 140 of acquisition channels (stated in column 5 lines 2-6), wherein the frame is divided

into fifteen slots synchronized with the synchronization channels (SCH) comprising the Primary

SCH (pilot 132) and Secondary SCH (combined 140) shown in FIG.5, but Jamal et al. does not

explicitly indicate structuring the synchronization codes. However the Nortel teaches the known

and published structuring of the synchronization codes, PSC and SSC, in page 3 lines 20-24 (the

paragraph before the 3.Analysis, TSGR1#2), wherein the PSC uses a hierarchical sequence (the

first sequence, page 2 the last paragraph to page 3 the first line of TSGR1#2), the SSC is

constructed by addition modulo 2 (exclusives OR) of a Hadamard sequence (second sequence of

which the code words selected from the Hadamard sequence) and a hierarchical sequence (the

third sequence) also used for the PSC (from the first sequence). The Hadamard sequence is

different for each SSC and orthogonal with each other, the Hadamard/second sequence

consisting fifteen code words (Cs in the frame) are selected from the different orthogonal

Hadamard sequences. As Jamal performing the cell searching of the asynchronous CDMA

system, at the time of the invention, it would have been obvious to a person of ordinary skill in

the art to have the known synchronous codes structuring taught by Nortel in Jamal's base station

to generate the synchronous codes to accommodate the 3GPP standards and to provide a better

mutually orthogonal synchronous codes for improving the cell site search performance (Nortel

page 4 lines 14-17 or the last three lines of the third paragraph TSGR1#2).

To claim **4-5, 15, 18, 22, 30, 31, 40, 43, 47, 53, 56, 60, & 62**, the Jamal's apparatus and

method with modified SCH codes taught by Nortel teaches in page 3 lines 20-24, the SSC is

constructed by a Hadamard sequence as the second sequence of which the code words selected

from the Hadamard sequence), and in FIG.5 ('366) the frame is divided into fifteen slots

synchronized with the synchronization channels (SCH) comprising the Primary SCH (pilot 132)

and Secondary SCH (combined 140) with code words of SSC.

To **claims 6-9, 23, 32-34, & 48**, the Jamal's apparatus and method with modified SCH

codes taught by Nortel teaches the Hadamard sequences selected from a set of 256 cyclic

hierarchical sequences (Walsh sequences) with a defined order (Figure 4 on page 6 of Nortel)

that the sixteen sequence (in sixteen slots) selected every sixteenth in the defined order, wherein

the $c_s^{i,1}$ and $c_s^{i+1,1}$ (or $c_s^{i,2}$ and $c_s^{i,2}$;...; $c_s^{i,16}$ and $c_s^{i+1,16}$) is selected every sixteenth in the defined

order.

To **claims 11, 14, 16-17, 21, 25-26, 36, 39, 41-42, 46, 49, 52, & 55**, the Jamal's apparatus

and method with modified SCH codes taught by Nortel teaches the SSC is constructed by

addition modulo 2 (exclusives OR) of a Hadamard sequence (second sequence of which the code

words selected from the Hadamard sequence) and a hierarchical sequence also used for the PCS

(third sequence is from the first sequence) in page 3 lines 20-24 of TSGR1#2(99)090.

To **claim 24**, Jamal et al. discloses the transmitter comprising a CDMA Transmitter

(FIG.7 112 the base stations).

To **claims 51 & 59**, the Jamal's apparatus and method with modified SCH codes taught

by Nortel teaches the SSC code sequence comprising 32 repeated instances of the a subset of bits

from the first code sequence (Figure 4, page 6, and page 7 lines 4-6, the bits from X_1 and X_2 and

repeated in 32 groups, TSGR1#2(99)090).

8.   Claims 3, 10, 12-13, 19, 20, 29, 35, 37-38, 44-45, 54, 57, 61, and 63 are rejected under 35

U.S.C. 103(a) as being unpatentable over Jamal et al. (US 5,930,366) in view of Nortel

(TSGR1#2(99)090 and TSGR1#5(99)684) as applied to claims 1, 27, 50, and 58 above, and

further in view of Popovic' (US 6,567,482 B1).

To **claims 3 & 10, 19, 29, 35, 44, 57 & 63**, Jamal et al. does not explicitly specify the

Golay sequence and the details of constructing SSC, however Popovic' teaches the PSC is a

Golay complementary sequence (column 7 lines 9-15, column 19 line 67-column 20 line 3) and

the 256 Walsh/Hadamard sequences have a defined order (column 20 lines 25-40 '482); and

wherein the plurality of Hadamard sequences comprise seventeen Hadamard sequences selected

as every eighth sequence in the defined order (column 20 lines 25-40, column 21 line 20-column

22 line 5, wherein the permutation defined in equation (1) at column 10 lines 25-55 as every

eighth sequence in the defined order).

As Jamal et al. teaches the slot timing of the PSC in the pilot channel and frame timing information of the SSC is derived from the associated pilot code (column 7 line 59-column 8 line 1) in synchronization of the asynchronous CDMA and Popovic' providing a method for efficient synchronization via synchronization channels with PSC and SCC, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the Popovic's teaching (Fig.5 '482) that PSC comprising a Gloay sequence implemented in the Jamal et al.'s method to optimize the cell search codes with a better MAS value (column 19 lines 5-10). The combined/modified method/apparatus provides accurate and efficient synchronization between radio transceivers (Abstract).

To **claims 12-13, 20, 37-38 & 45**, in the combined/modified system/method of Jamal et al., Popovic' teaches the composing the PSC/Golay complementary sequences with an arbitrary number of +1 and –1 Wn (column 10 lines 10-60) to provide a complete Golay sequences of length 256 chips (column 20 lines 30-40) that cover the invention specified in the claims (different permutations/combinations '482).

To **claims 54 & 61**, the combined/modified system/method of Jamal et al., Popovic' discloses each of the second and third code sequences comprise 256 bits (410 Fig.12, column 4 lines 40-50 '482), and wherein the subset of bits from the first code sequence comprises a fourth code sequence of bits and a complement of the fourth code sequence of bits (a(k) & b(k) Fig.5 are the fourth code sequence of bits, column 10 lines 10-50, wherein the $a_n(k)$ and $b_n(k)$ are two complementary sequence of the first sequence '482).

9.   Claims 64-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jamal et al.

(US 5,930,366) in view of Nortel (TSGR1#2(99)090, TSGR1#5(99)684) and Popovic' (US

6,567,482 B1).

        To **claims 64 & 69**, Jamal et al. teaches asynchronous CD-CDMA system (column 2

lines 50-52) with cell-specific long code (column 1 lines 17-21) and its cell acquisition method

in FIG.7, wherein the base station encodes and transmit the frame with the primary

synchronization code (PSC, Cp) in each slot in FIG.5 in the pilot channel 132 of acquisition

channels, and secondary synchronization code (SSC, Cs) in the combined channel 140 of

acquisition channels (stated in column 5 lines 2-6), wherein the frame is divided into fifteen slots

synchronized with the synchronization channels (SCH) comprising the Primary SCH (pilot 132)

and Secondary SCH (combined 140) shown in FIG.5, but Jamal et al. does not explicitly indicate

structuring the synchronization codes.

        However the Nortel teaches the known and published structuring of the synchronization

codes, PSC and SSC, in page 3 lines 20-24, wherein the PCS uses a hierarchical sequence (the

first sequence), the SSC is constructed by addition modulo 2 (exclusives OR) of a Hadamard

sequence (second sequence of which the code words selected from the Hadamard sequence) and

a hierarchical sequence also used for the PCS (third sequence is from the first sequence). The

Hadamard sequence is different for each SSC and orthogonal with each other, the second

sequence consisting fifteen code words are selected from the different orthogonal Hadamard

sequences. As Jamal performing the cell search of the asynchronous CDMA system, at the time

of the invention, it would have been obvious to a person of ordinary skill in the art to have the

known synchronous codes structuring taught by Nortel in Jamal's base station to generate the

synchronous codes to accommodate the 3GPP standards and to provide a better mutually

orthogonal synchronous codes for improving the cell site search performance (Nortel page 4

lines 14-17 or the last three lines of the third paragraph); and

Popovic' teaches the Golay pair of the PCS (column 20 lines 30-38) comprising subset of

bits from the first code sequence comprises a fourth code sequence of bits and a fifth sequence

wherein the complement of the fourth code sequence of bits is the fifth sequence (a(k) Fig.5 is

the fourth code sequence of bits, b(k) is the fifth code sequence; column 10 lines 10-50, wherein

the $a_n(k)$ and $b_n(k)$ are two complementary sequence of the first sequence '482). As Jamal et al.

teaches the slot timing of the PSC in the pilot channel and frame timing information of the SSC

is derived from the associated pilot code (column 7 line 59-column 8 line 1) in synchronization

of the asynchronous CDMA and Popovic' providing a method for efficient synchronization via

synchronization channels with PSC and SCC, at the time of the invention, it would have been

obvious to a person of ordinary skill in the art to have the Popovic's teaching (Fig.5 '482) that

PSC comprising a Gloay sequence implemented in the Jamal et al.'s method to optimize the cell

search codes with a better MAS value (column 19 lines 5-10). The combined/modified

method/apparatus provides accurate and efficient synchronization between radio transceivers

(Abstract).

To **claim 65**, in the Jamal's modified apparatus and method, Nortel teaches the SSC is

constructed by addition modulo 2 (exclusives OR) of a Hadamard sequence (second sequence of

which the code words selected from the Hadamard sequence) and a hierarchical sequence also

used for the PCS (third sequence is from the first sequence) in page 3 lines 20-24 of

TSGR1#2(99)090.

To **claims 66 & 70**, in the Jamal's modified apparatus and method, Nortel teaches in page 3 lines 20-24, the SSC is constructed by addition modulo 2 (exclusives OR) of a Hadamard sequence (second sequence of which the code words selected from the Hadamard sequence) and a hierarchical sequence also used for the PCS (third sequence is from the first sequence), and in FIG.5 ('366) the frame is divided into fifteen slots synchronized with the synchronization channels (SCH) comprising the Primary SCH (pilot 132) and Secondary SCH (combined 140) with code words of SSC.

To **claims 67 & 71**, in the Jamal's modified apparatus and method, Nortel teaches the Hadamard sequences selected from a set of 256 cyclic hierarchical sequences (Walsh sequences) with a defined order (Figure 4 on page 6 of Nortel) that the sixteen sequence (in sixteen slots) selected every sixteenth in the defined order, wherein the $c_s^{i,1}$ and $c_s^{i+1,1}$ (or $c_s^{i,2}$ and $c_s^{i,2}$;...; $c_s^{i,16}$ and $c_s^{i+1,16}$) is selected every sixteenth in the defined order.

To **claims 68 & 72**, in the combined/modified system/method of Jamal et al, Popovic' teaches the composing the PSC/Golay complementary sequences with an arbitrary number of +1 and −1 Wn (column 10 lines 10-60) to provide a complete Golay sequences of length 256 chips (column 20 lines 30-40) that cover the invention specified in the claims (different permutations/combinations).
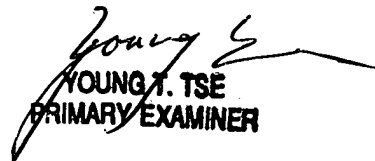

10.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M Chang whose telephone number is 571-272-3041. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Jayanti Patel can be reached on 571-272-2988. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang
January 21, 2005

YOUNG T. TSE
PRIMARY EXAMINER